

**UAT-WP-9-03B**  
**10 December 2001**

**RTCA Special Committee 186, Working Group 5**

**ADS-B UAT MOPS**

**Meeting #9**

**Proposed Simulation Roadmap**

**Presented by Chris Moody**

<b>SUMMARY</b>
I propose that the Working Group briefly review this Proposed Simulation Roadmap, plus the updated "Key Physical Layer Parameters" chart from Norfolk prior to launching in our simulation presentations for Meeting 9. I think that collectively these two items capture the simulation activity fairly well.

## Assumed Interference and Impairments to UAT

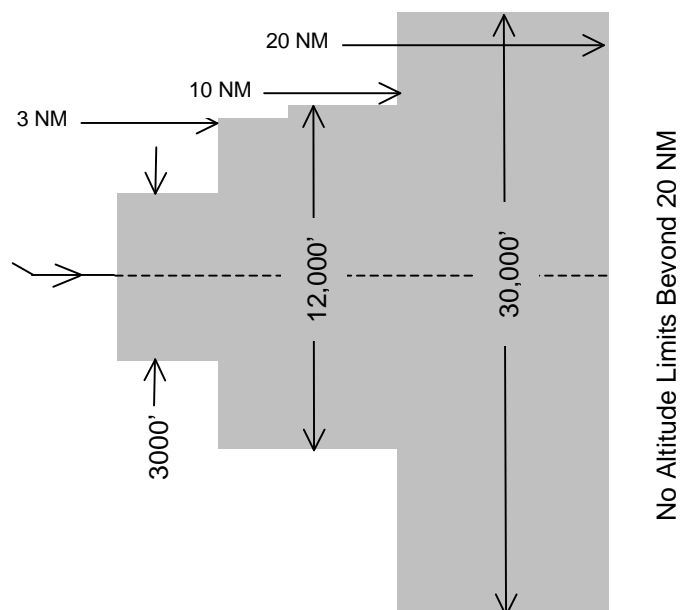
		Scenarios			
		Core Europe 2015	Core Europe Current	LA 2020	Low Density
Standard Interference Environment	UAT Self Interference	Per TLAT Core Europe 2015 (2091 a/c in 300 NM radius) + 100 Surface vehicles per major airport @ 28-32 dBm and 1 Basic msg/sec	1193 aircraft 500 ground vehicles 300 NM radius	Per TLAT LA 2020 (2694 a/c in 400 NM radius) + 100 Surface vehicles per major airport @ 28-32 dBm and 1 Basic msg/sec	Per TLAT Low Density (360 a/c in 400 NM radius) + No surface vehicles
	DME	All currently planned 979 assignments (Al Muaddi to translate into the signal conditions present for each victim situation)	All current 978 and 979 assignments	None	Same DME environment as CE 2015
	JTIDS (levels seen at UAT victim antenna port)	TSDF 50% @ -39 dBm + TSDF 50% @ -60 dBm + TSDF 300% @ -84.5 dBm	TSDF 50% @ -39 dBm + TSDF 50% @ -60 dBm + TSDF 300% @ -84.5 dBm	TSDF 50% @ -39 dBm + TSDF 50% @ -60 dBm + TSDF 300% @ -84.5 dBm	TSDF 50% @ -39 dBm + TSDF 50% @ -60 dBm + TSDF 150% @ -78 dBm + TSDF 150% @ -82 dBm
Installation and Implementation Assumptions	Co-site	See "Co-site Events" table (scenario independent)			
	UAT Implementation Effects (Applies to all classes)	Re-trigger capable			
		T/R switching results in 2 millisecond receiver blanking immediately before and after own-ship transmissions			
		-20 dBc pedestal for 4 usec duration immediately before and after own-ship transmission			
		"Pulse stretching" effects from high level DME seen in bench tests of "Pre-MOPS" units included in model			

### Co-site Events Resulting in Receiver Blanking

Event	Event Blanking Interval (usec)		Events per Second			
	Event Duration	Additional Blanking due to Rx Recovery	A0	A1	A2	A3
DME Interrogations	19	??*	70	70	70	70
ATCRBS Replies	20	??*	200	200	200	200
Mode S Replies	64	??*	4.5	4.5	4.5	4.5
Mode S Interrogations	20	??*	5	5	5	5
Whisper Shout Interrogations	25	??*	80	80	80	80

\*No allowance for this currently. FAA-TC tests will determine if necessary. Can be capped at 15 usec by assuming suppression circuitry is in effect.

### Targets of Interest for Computing Update Interval



### Overview of Simulation Outputs

Perspective of Victim Receiver			Scenario			
Location	Altitude	Rx Type	Core Europe 2015	Core Europe Current	LA 2020	Low Density
At Scenario Center	40,000'	A2/A3	x		x	x
		A1	x		x	x
		A0				
	15,000'	A2/A3	x		x	
		A1	x		x	
		A0	x		x	
	On Approach (2000')	A0 <sup>1</sup> & A1	x		x	x
	On Surface (979 Mhz DME @ -10 dBm)	A0 <sup>2</sup>	x		x <sup>3</sup>	x
		Ground Station	x		x <sup>4</sup>	x
		Ground Station <sup>5</sup>	x			x
At DME "Hot Spot"	40,000'	A2/A3	x			
		A1	x			
		A0				
	15,000	A2/A3	x			
		A1	x			
		A0	x			

<sup>1</sup> Update intervals based on B2 vehicle "probe" on surface approaching from 20 miles

<sup>2</sup> Update intervals based on A0 aircraft "probe" approaching from 20 miles at 2000'

<sup>3</sup> No DME interference included in this case

<sup>4</sup> No DME interference included in this case

<sup>5</sup> With cavity filter in line that is assumed to reduce DME interference to that equivalent of on-channel DME at -50 dBm. Filter assumed to introduce insertion loss of 4 dB